



Citizen Summary

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

ArcelorMittal Indiana Harbor, LLC Indiana Harbor West 2011 Draft Wastewater Permit NPDES Permit IN0000205 August 2011

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Mitchell E. Daniels, Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue, Mail Code 65-42, Indianapolis, IN 46204
Phone: (317) 232-8631 Toll Free: (800) 451-6027

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1) Introduction

Under the federal Clean Water Act, facilities that treat and discharge wastewater into a water of the United States (stream, lake, or wetland) must obtain and comply with a National Pollutant Discharge Elimination System (NPDES) permit. The IDEM Office of Water Quality (OWQ) administers the federal NPDES permitting program under a memorandum of understanding with the United States Environmental Protection Agency (U.S. EPA).

NPDES permits are effective for a specific time frame, up to five years. IDEM must reissue NPDES permits at least every five years. Permittees must apply for a renewal before their permit's expiration date. The permit renewal process allows IDEM to update permit conditions to account for facility operations and environmental regulations that may have changed over the term of the permit. IDEM is proposing to renew the NPDES permit for ArcelorMittal Indiana Harbor West (IN0000205) for a five year period.

An individual permit is a permit specifically tailored to an individual facility. Individual NPDES permit documents include the Draft Permit and a Fact Sheet that contain extensive technical details and regulatory information about the permitted facility and the NPDES permit conditions.

IDEM is providing this additional Citizen Summary to explain the purpose of an NPDES permit and permitting terminology; summarize the steps in the NPDES permitting process and how the public can participate in the review process; and summarize the permit renewal conditions being proposed for the ArcelorMittal Indiana Harbor West NPDES permit renewal.

2) The purpose of an NPDES permit

NPDES permits contain limits for the amount of pollutants a facility can discharge in treated wastewater. NPDES permits also contain the facility's requirements for monitoring pollutants in its discharge and for submitting monitoring reports to IDEM Office of Water Quality (OWQ). IDEM OWQ administers the federal NPDES permitting program under a memorandum of understanding with the United States Environmental Protection Agency (U.S. EPA).

3) Permitting terminology

Clean Water Act (CWA) Section 301(g) – Section 301(g) of the Clean Water Act and state rules found in the Indiana Administrative Code at 327 IAC 5-3-4(b)(2) allow for a variance from the applicable Best Available Treatment (BAT) requirements through the development of proposed modified effluent limitations (PMELs) for the non-conventional pollutants of ammonia, chlorine, color, iron, and total phenols (4AAP) provided that the following conditions are met:

- (1) The PMELs will meet the categorical BPT effluent limitations (Technology Based Effluent Limits (TBELs)) or applicable Water Quality-Based Effluent Limitations (WQBELs), whichever are more stringent;
- (2) The PMELs will not result in any additional requirements on other point or nonpoint sources;
- (3) The PMELs will not interfere with the attainment or maintenance of water quality which will protect public water supplies, aquatic life and recreational activities; and,
- (4) The PMELs will not result in the discharge of pollutants in quantities which may reasonably be anticipated to pose an unacceptable risk to human health or the environment because of bioaccumulation, persistency in the environment, acute toxicity, chronic toxicity (including carcinogenicity, mutagenicity or teratogenicity) or synergistic propensities.

Clean Water Act (CWA) Section 316(a) - Under Section 316(a) of the CWA, thermal effluent, such as cooling water, is considered a pollutant, and facilities wishing to discharge thermal effluent into a water source must apply for an NPDES permit. Section 316(a) allows a thermal discharger to obtain a thermal effluent variance by demonstrating that less stringent thermal effluent limitations would still protect aquatic life.

Clean Water Act (CWA) Section 316(b) - Under Section 316(b) of the CWA, cooling water intake structure (CWIS) shall be established so that the location, design, construction, and capacity of the CWIS reflect the best technology available to minimize adverse environmental impact.

Cooling water (40 CFR part 125.93) - Cooling water means water used for contact or non-contact cooling. This includes water used for equipment cooling, evaporative cooling tower makeup, and dilution of effluent heat content. The intended use of the cooling water is to absorb waste heat rejected from the process or processes used, or from auxiliary operations on the facility's premises. Cooling water that is used in a manufacturing process either before or after it is used for cooling is considered process water for the purposes of calculating the percentage of a facility's intake flow that is used for cooling purposes in §125.91(a)(4).

Daily maximum - the maximum allowable daily discharge for any calendar day.

Draft permit - a document prepared prior to the public comment period by the commissioner indicating the commissioner's tentative decision to: (1) issue or deny; (2) modify; (3) revoke and reissue; (4) terminate; or (5) reissue a permit.

Effluent - a wastewater discharge from a point source to the waters of the state.

Effluent limitation - any restriction established by the IDEM commissioner on quantities, discharge rates, and concentrations of pollutants that are discharged, or will be discharged, from point sources into waters of the state.

Effluent limitations guideline - a regulation adopted by the administrator of the U.S. EPA, under Section 304(b) of the CWA, for use in establishing effluent limitations for specific point sources within a particular industrial class or category.

Monthly average - the total mass or flow-weighted concentration of all daily discharges during a calendar month on which daily discharges are sampled or measured, divided by the number of daily discharges sampled and/or measured during such calendar month. The monthly average discharge limitation is the highest allowable average monthly discharge for any calendar month.

National Pollutant Discharge Elimination System or NPDES - the national program for: (1) issuing; (2) modifying; (3) revoking and reissuing; (4) terminating; (5) denying; (6) monitoring; and (7) enforcing permits for the discharge of pollutants from point sources and imposing and enforcing pretreatment requirements by the U.S. EPA or an authorized state under Sections 307, 318, 402, and 405 of the Clean Water Act.

Outfall - the point of discharge from a point source.

Permit - any written authorization, license, or equivalent document issued to regulate the discharge of pollutants, the construction of water pollution treatment or control facilities, or land application of sludge or waste products.

Point source - any discernible, confined, and discrete conveyance, including, but not limited to, any of the following from which pollutants are or may be discharged: (1) Pipe. (2) Ditch. (3) Channel. (4) Tunnel. (5) Conduit. (6) Well. (7) Discrete fissure. (8) Container. (9) Rolling stock. (10) Concentrated animal feeding operation. (11) Landfill leachate collection system. (12) Vessel. (13) Other floating craft.

Process wastewater - any water that, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Sanitary wastewater - (commonly called sewage) the liquid and water-carried waste from residences, commercial buildings, industrial plants, institutions and other places of human occupancy that is transported by sewers and is primarily composed of human and household waste.

Wastewater - liquid or water-carried wastes from industrial, municipal, agricultural, or other sources.

4) Steps in the process for the renewal of the ArcelorMittal Indiana Harbor, LLC – Indiana Harbor West NPDES permit

Drafting the NPDES Permit and Fact Sheet:

IDEM uses a great deal of information and data in the development of the permit renewal documents, which include the Draft NPDES Permit and a Fact Sheet. IDEM permit writers review information in the NPDES permit application submitted by the facility, the conditions contained in the currently applicable permit document, the facility's compliance history, the effluent quality and characteristics, the receiving water's characteristics, and the applicable state and federal laws, regulations, rules and guidelines. The draft NPDES permit and Fact Sheet for ArcelorMittal Indiana Harbor West have been developed with the cooperation and oversight of the U.S. EPA.

Public participation:

When IDEM completes its work on the Draft NPDES Permit and Fact Sheet, time will be provided for the public to review and comment on the documents. IDEM announces the opportunity for public review and comment by placing a notice in the legal section of the local newspaper and sending letters and e-mails to people and organizations that have requested notification. At least 30 days are provided for the public to review and submit written comments on a Draft NPDES Permit. As part of the public participation process, IDEM also holds formal hearings, at which time oral comments are received.

Comments addressing the technical or legal basis of the permit conditions or additional suggestions to control water pollution are deemed most helpful. IDEM will make a final decision about permit conditions only after a thorough review of all timely submitted comments, and may make changes to the permit conditions based on issues raised during the public participation process. When the final permit documents are issued, IDEM will provide a formal response for all timely submitted comments for the public to review.

Where to review a copy of the Draft NPDES Permit and Fact Sheet:

Copies of the Draft NPDES Permit and Fact Sheet for ArcelorMittal Indiana Harbor West are available for public review at these locations:

On IDEM's website at <http://www.in.gov/idem/5338.htm>

Lake County Health Department
2293 North Main Street
Crown Point, Indiana 46307
Telephone: (219) 755-3655

Gary Public Library/Main Branch
220 West 5th Avenue
Gary, Indiana 46402

IDEM Northwest Regional Office
8380 Louisiana Street
Merrillville, IN 46410
Phone: (219) 757-0265
Toll Free: (888) 209-8892 (within Indiana)
Fax: (219) 757-0267

IDEM's Indianapolis Office
Indiana Government Center North, Room 1201
100 North Senate Avenue
Indianapolis, IN 46204

How to submit comments:

IDEM will accept written comments that are postmarked or e-mailed to the agency by September 30, 2011. *Comments should include Permit Number IN0000205.*

Mail to:

Richard Hamblin
IDEM, Office of Water Quality
MC 65-42 IGCN 1255
100 N Senate Ave
Indianapolis, IN 46204-2251

E-mail to:

rhamblin@idem.IN.gov

Public hearing:

As part of the public participation process, IDEM will hold a formal Public Hearing on this Draft NPDES Permit at 6 p.m. (local time) on Thursday, September 15, 2011 at **Ivy Tech Community College-Gary Campus, in the Multipurpose Room (North Building), located at 1440 East 35th Avenue, Gary, Indiana.** The Public Hearing will provide an opportunity for interested parties and IDEM staff to discuss the NPDES permit. Citizens will also have an opportunity during the IDEM Public Hearing to submit written comments and make formal oral statements concerning the draft permit. A court reporter will be present at the IDEM Public Hearing to assure oral statements are documented, as they will be considered part of the official record.

Final permit decision:

When IDEM's Office of Water Quality takes final action relating to the permit, it will mail a Notice of Decision to individuals who have submitted comments or requested to receive notification. Individuals who do not wish to submit comments but wish to receive notification should submit their name and address to IDEM with a request to be placed on the permit mailing list.

5) Permit renewal conditions

All NPDES permits contain five general sections: the Cover Page (with the name and location of the permittee, a statement authorizing the discharge, and the specific locations for which a discharge is authorized); Effluent Limits (information about how discharges of pollutants will be controlled); Monitoring and Reporting Requirements; Special Conditions (such as best management practices (BMPs), additional monitoring activities, and surveys or evaluations of the receiving waters); and Standard Conditions (pre-established conditions that apply to all NPDES permits).

Following is additional information about the draft permit documents for ArcelorMittal Indiana Harbor West.

About the permit application:

The current permit was issued on September 30, 1986, and was subsequently modified on June 21, 1990, and September 26, 1991. The permit expired on September 29, 1991. The Department received the renewal application from ArcelorMittal in March 1991, with supplemental information being submitted over the past few years. As this renewal application was submitted to the agency in a timely manner prior to the expiration date of the permit, the permit is considered to be administratively extended in accordance with 327 IAC 5-2-6(b). A five year permit renewal is proposed.

Facility description:

The ArcelorMittal Indiana Harbor, LLC. – Indiana Harbor West (herein identified as AM West) facility is an integrated iron/steel manufacturing facility. The industrial processes conducted at this facility include the manufacture of iron, the manufacture of steel, rolling mill operations, and finishing operations. Intermediate and final products include sinter, iron, raw steel, cast steel, hot strip, cold rolled strip, hot dip galvanized strip, and chromium and tin plated strip. In addition to the steel manufacturing processes, there are additional support operations that include power generation, wastewater treatment, recycling, laboratory, and research. The facility has an average discharge of approximately 196.5 million gallons per day (MGD) and has been given a Class D industrial wastewater treatment plant classification in accordance with 327 IAC 5-22. AM West has five point source discharges that include treated process wastewater, non-process wastewater, and storm water. A complete listing and description of the wastewater and discharge outfall points are detailed in the Fact Sheet.

Receiving water and use classification:

The Indiana Harbor Canal and Indiana Harbor are designated for full-body contact recreation and shall be capable of supporting a well-balanced, warm water aquatic community. The Indiana Harbor is designated as an industrial water supply. The Indiana portion of the open waters of Lake Michigan is designated for full-body contact recreation; shall be capable of supporting a well-balanced warm water aquatic community; is designated as salmonid waters and shall be capable of supporting a salmonid fishery; is designated as a public water supply; is designated as an industrial water supply; and, is designated as an outstanding state resource

water. These waterbodies are identified as waters of the state within the Great Lakes system. As such, they are subject to the water quality standards and associated implementation procedures specific to Great Lakes system dischargers as found in 327 IAC 2-1.5, 327 IAC 5-1.5, and 327 IAC 5-2.

Section 303(d) of the Clean Water Act requires states to identify waters, through their Section 305(b) water quality assessments, that do not or are not expected to meet applicable water quality standards with federal technology based standards alone. States are also required to develop a priority ranking for these waters taking into account the severity of the pollution and the designated uses of the waters. Once this listing and ranking of impaired waters is completed, the states are required to develop [Total Maximum Daily Loads \(TMDLs\)](#) for these waters in order to achieve compliance with the water quality standards. Indiana's 2010 303(d) List of Impaired Waters was developed in accordance with Indiana's Water Quality Assessment and 303(d) Listing Methodology for Waterbody Impairments and TMDL Development for the 2010 Cycle. As of the 2010 303(d) List of Impaired Waters, the following impairments were listed for waters to which the permittee discharges:

Assessment Unit	Waterbody	Impairments	ArcelorMittal West Outfalls
INC0163_T1001	Indiana Harbor Canal	Impaired Biotic Communities, Oil and Grease, <i>E. coli</i> and PCBs in Fish Tissue	002, 009, and 010
INC0163G_G1078	Indiana Harbor	Free Cyanide, Mercury in Fish Tissue and PCBs in Fish Tissue	011
INM00G1000_00	Lake Michigan	Mercury in Fish Tissue and PCBs in Fish Tissue	012

The permittee discharges to a waterbody that has been identified as a Water of the State within the Great Lakes system and that is a tributary to an outstanding state resource water (OSRW). In addition to OSRW antidegradation implementation procedures under 327 IAC 5-2-11.7, it is subject to other NPDES requirements specific to Great Lakes system dischargers under 327 IAC 2-1.5 and 327 IAC 5-2-11.2 through 327 IAC 5-2-11.6. These rules address water quality standards applicable to dischargers within the Great Lakes system and reasonable potential to exceed water quality standards procedures.

As required by 327 IAC 5-2-11.3(b)(2), Part II.A.16. of the renewal permit specifically prohibits the permittee from undertaking deliberate actions that would result in new or increased discharges of bioaccumulative chemicals of concern (BCCs) or new or increased permit limits for non-BCCs, or from allowing a new or increased discharge of a BCC from an existing or proposed industrial user, without first proving that the new or increased discharge would not result in a significant lowering of water quality, or by submission and approval of an antidegradation demonstration to IDEM.

Wastewater sources and treatment by outfall:

Outfall 002 discharges to the Indiana Harbor Ship Canal

Outfall 002 consists of storm water, ground water from basement sumps, and non-contact cooling wastewater from the pickling and hot-dip galvanizing lines. Outfall 002 has an average discharge of approximately 11.2 MGD.

Outfall 009 discharges to the Indiana Harbor Ship Canal

Outfall 009 consists of storm water, ground water from basement sumps, non-contact cooling wastewater from the powerhouse area, and treated effluent from a newly constructed treatment plant for the blast furnace and sinter plant blowdown. The newly constructed treatment plant is regulated at Internal Outfall 509. Outfall 009 has an average discharge of approximately 55.3 MGD.

Internal Outfall 509 discharges to Outfall 009

The categorical wastestreams regulated at Internal Outfall 509 consist of sinter plant and blast furnace blowdowns. Internal Outfall 509 is expected to have an average discharge of approximately 1.08 MGD.

Outfall 010 discharges to the Indiana Harbor Ship Canal

Outfall 010 consists of storm water, ground water from basement sumps, and non-contact cooling wastewater from the blast furnace, sinter plant, powerhouse and boiler house. Outfall 010 also collects overflow from the non-contact cooling water at the sinter plant and powerhouse area. Outfall 010 has an average discharge of approximately 36.6 MGD.

Outfall 011 discharges to the Indiana Harbor

Outfall 011 consists of storm water, ground water from basement sumps, vacuum degassing, continuous casting, and on-site oil processing facility process wastewaters, boiler house wastewater, vacuum truck decant as well as non-contact cooling water serving the Basic Oxygen Furnace (BOF), vacuum degasser, and continuous caster. Two new treatment systems have been installed for treatment of wastewaters from the vacuum degasser and continuous casting operations. These wastestreams will be regulated at Internal Outfalls 701 and 702, respectively. Outfall 011 is expected to have an average discharge of approximately 23.4 MGD.

Internal Outfall 701 discharges to Outfall 011 when not evaporated

The categorical wastestreams regulated at Internal Outfall 701 consist of vacuum degasser wastewater. The treated effluent from Internal Outfall 701 will be primarily disposed of by evaporation in the BOF hood sprays. Therefore, the flow from Internal Outfall 701 will be very intermittent.

Internal Outfall 702 discharges to Outfall 011 when not evaporated

The categorical wastestreams regulated at Internal Outfall 702 consist of continuous casting wastewater. The treated effluent from Internal Outfall 702 will be primarily disposed of by evaporation in the BOF hood sprays. Therefore, the flow from Internal Outfall 702 will be very intermittent.

Outfall 012 discharges to Lake Michigan

Outfall 012 consists of process wastewaters from the Hot Strip Mill Filter Plant (Internal Outfall 111); the Oily Waste Treatment Plant (OWTP) for the Pickling and Cold Rolling operations and Hot Strip Mill oily-waste sumps (Internal Outfall 211); non-contact cooling water; storm water and ground water to the No. 3 Intake forebay from the North Pond. The No. 3 intake is located on a channel that runs along the west side of the Indiana Harbor breakwall from Lake Michigan, past the No. 3 intake, and to the Indiana Harbor West No. 2 intake. This channel is considered the open waters of Lake Michigan. Outfall 012 has an average discharge of approximately 70 MGD. However, a substantial amount of the discharge from Outfall 012 is recycled through the No. 3 Intake and the No. 3 Cold Mill Complex. The facility conducted a dye dilution study in November 2010 to determine the amount of discharge flow from Outfall 012 that is recycled through and how much bypasses the No. 3 intake. The flow that bypasses the No. 3 intake is likely taken into the facility at the No. 2 intake. When the 84-inch hot strip mill was operating, the daily average percentage of flow recycled was 89.8% the first day and 88.0% the second day. When the 84-inch hot strip mill was not operating, the daily average percentage of flow recycled was 100% the first day and 99.2% the second day. Based on this study, it would be reasonable to consider that 12% of the Outfall 012 flow bypasses the No. 3 intake and directly enters waters of the state.

Internal Outfall 111 discharges to the North Lagoon prior to Outfall 012

The categorical wastestreams regulated at Internal Outfall 111 consist of wastewater from the Hot Strip Mill. Internal Outfall 111 is the 84" Hot Strip Mill (HSM) wastewater treatment system. At the HSM, slabs from the continuous caster are heated to rolling temperature by reheat furnaces. As part of the rolling process, high-pressure water is used to remove scale from the reheated slabs and to cool the work rolls. The slabs are reduced in thickness as they are processed through the roughing stands, intermediate rolling stands, and finishing stands. The strip is then coiled and transported to subsequent finishing operations at AM West or sold as "hot bands." Process wastewater from the HSM is treated initially through one of two scale pits.

The No. 1 Scale Pit has three cells and handles wastewater from the furnace run out tables, vertical edger, No. 1 & 2 roughing mills, and the No. 1 descaler. The No. 2 Scale Pit has five cells and handles water from the main mill flumes, delay table, finishing stands, entry and exit descalers at the finishing mill, run out table, and direct contact cooling water from the coilers.

Wastewater from both scale pits is pumped to a filtration plant that consists of 42 large sand filters. The effluent from the filter plant is directed to the North Lagoon via Internal Outfall 111. Filter backwash is directed to a sludge thickener and dewatered. Solids are disposed at an off-site landfill. Overflow from the sludge thickener is directed back to the influent of the filter plant. The filter plant has an average discharge of approximately 38.3 MGD to the North Lagoon.

Internal Outfall 211 discharges to the North Lagoon prior to Outfall 012

The categorical wastestreams regulated at Internal Outfall 211 consist of wastewater from the cold rolling and pickling operations. Internal Outfall 211 is the Oily Wastewater Treatment Plant (OWTP), which serves the No. 3 Cold Mill Complex. The No. 3 Cold Mill Complex includes the No. 3 hydrochloric acid pickling line, the No. 3 five-stand tandem cold reduced sheet mill (CRSM) and the No. 3 direct application temper cold rolling mill. The OWTP is located adjacent to the HSM filter plant. The OWTP consists of a clarifier for gravity separation of free oil and suspended solids, a flash mix tank for aeration of acid rinse water and addition of ferric chloride, caustic neutralization for pH control, a flocculation tank, and two dissolved air flotation (DAF) units for final separation of oil, suspended solids, and metals. The effluent from the DAF units is

discharged to the North Lagoon via Internal Outfall 211 and has an average discharge of approximately 2.24 MGD.

Internal Outfall 411 discharges to Outfall 012

Due to the fact that the wastestreams from Internal Outfalls 111 and 211 have the ability to combine, Internal Outfall 411 is established in this permit as the summation of limitations for Total Suspended Solids and Oil and Grease at Internal Outfalls 111 and 211.

Water Intake Discharges to Lake Michigan

Intake screen backwash from the No. 1 Pump House is returned to the Indiana Harbor Ship Canal. Intake screen backwash from the common screen house serving the No. 2 Pump House, Low Head Pump House, and Power House Pump House, as well as the No. 3 Pump House is returned to Lake Michigan.

Effluent limitations rationale – general:

Federal Effluent Guidelines in 40 CFR 420, Iron and Steel Manufacturing Point Source Category, and the Indiana Water Quality Based Effluent Limitations are applicable because the facility is defined as a fully integrated steel mill. According to 40 CFR 122.44 and 327 IAC 5, NPDES permit limits are based on technology-based limitations, where applicable, best professional judgment (BPJ), and Indiana Water Quality-Based Effluent Limitations (WQBELs).

U.S. EPA Effluent Guidelines -- Existing Source Standards

The U.S. EPA has established technology-based effluent guidelines for the Iron and Steel Manufacturing Point Source Category (40 CFR Part 420). Since this is an existing facility, all process wastewater discharges are subject to effluent guidelines identified in 40 CFR 420.

Indiana Water Quality Based Effluent Limits (WQBELs)

The water quality-based effluent limitations for this facility are based on water quality criteria in 327 IAC 2-1.5 and implementation procedures in 327 IAC 5-2. Limitations and/or monitoring are required for parameters identified by applications of the reasonable potential to exceed WQBEL under 327 IAC 5-2-11.5.

Narrative Water Quality Based Limits

The narrative water quality contained under 327 IAC 2-1.5-8(a) have been included in this permit to ensure that the narrative water quality criteria are met.

Numeric Water Quality Based Limits

The numeric water quality criteria and values contained in this permit have been calculated using the tables of water quality criteria 327 IAC 2-1.5-8.

Effluent limitations by outfall:

Outfall 002

Parameter	Sample Frequency	Sample Type	Concentration (mg/l)		Mass (lb/d)	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Flow	1 X Week	24 Hr. Total	----	----	Report	Report
Total Suspended Solids	1 X Week	24-Hr. Comp.	Report	Report	Report	Report
Oil and Grease	1 X Week	Grab	Report	Report	Report	Report
Total Residual Chlorine	1 X Day[1]	Grab	0.016	0.037	1.5	3.5[2]
Mercury[3] Interim Final	6 X Year 6 X Year	Grab Grab	Report 1.3 (ng/l)	Report 3.2 (ng/l)	Report 0.00012	Report 0.00030
Temperature Intake Outfall	2 X Week 2 X Week	Grab Grab	Report (°F) Report (°F)	Report (°F) Report (°F)	----- -----	----- -----
Thermal Discharge	2 X Week	Report	-----	-----	Report (MBtu/hr)	Report (MBtu/hr)
pH[4]	1 X Week	Grab	-----	-----	-----	-----

[1] Monitoring for TRC shall be 1 X Daily during Zebra or Quagga mussel intake chlorination, and continue for three additional days after Zebra or Quagga mussel treatment has been completed.

[2] Compliance with the daily maximum mass value will be demonstrated if the calculated mass value is less than 5.6 lbs/day.

[3] Schedule of Compliance (54 Month)

[4] pH limitations are 6.0 standard units (daily minimum) and 9.0 standard units (daily maximum).

Outfall 009

Parameter	Sample Frequency	Sample Type	Concentration (mg/l)		Mass (lb/d)	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Flow	1 X Week	24 Hr. Total	----	----	Report	Report
Total Suspended Solids	1 X Week	24-Hr. Comp.	Report	Report	Report	Report
Oil and Grease	1 X Week	Grab	Report	Report	Report	Report
Total Residual Chlorine	1 X Day[1]	Grab	0.012	0.028	5.5	13[2]
Ammonia, as N[3]	1 X Week	24-Hr. Comp.	Report	Report	425	1,000
Phenols (4AAP)[3]	1 X Week	Grab	Report	Report	Report	11
Zinc	1 X Week	24-Hr. Comp.	Report	Report	Report	Report
Lead	1 X Week	24-Hr. Comp.	Report	Report	Report	Report
Mercury[4] Interim Final	6 X Year 6 X Year	Grab Grab	---- 1.3 (ng/l)	---- 3.2 (ng/l)	---- 0.00060	---- 0.0015
Temperature Intake Outfall	2 X Week 2 X Week	Grab Grab	Report (°F) Report (°F)	Report (°F) Report (°F)	----- -----	----- -----
Thermal Discharge	2 X Week	Report	-----	-----	Report (MBtu/hr)	Report (MBtu/hr)
Whole Effluent Toxicity Testing	1 X Quarter	Lab Analysis	-----	-----	-----	-----
pH[5]	1 X Week	Grab	-----	-----	-----	-----

[1] Monitoring for TRC shall be 1 X Daily during Zebra or Quagga mussel intake chlorination, and continue for three additional days after Zebra or Quagga mussel treatment has been completed.

[2] Compliance with the daily maximum mass value will be demonstrated if the calculated mass value is less than 27.7 lbs/day.

[3] Ammonia (as N) and Phenols (4AAP) shall be reported on a net basis. Sampling for Ammonia (as N) and Phenols (4AAP) shall occur at the monitoring frequencies specified in the permit on the same day at Outfalls 009, 010, 011, and 509.

[4] Schedule of Compliance (54 Month)

[5] pH limitations are 6.0 standard units (daily minimum) and 9.0 standard units (daily maximum).

Internal Outfall 509

Parameter	Sample Frequency	Sample Type	Concentration (mg/l)		Mass (lb/d)	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Flow	2 X Week	24-Hr. Total	----	----	Report	Report
Total Suspended Solids	2 X Week	24-Hr. Comp.	Report	Report	736	2,213
Oil and Grease	2 X Week	Grab	Report	Report	38.1	114
Total Cyanide	2 X Week	Grab	Report	Report	29.8	59.6
Ammonia, as N	1 X Week	24-Hr. Comp.	Report	Report	Report	Report
Phenols (4AAP)	1 X Week	Grab	Report	Report	Report	Report
Zinc	2 X Week	24-Hr. Comp.	Report	Report	4.46	13.4
Lead	2 X Week	24-Hr. Comp.	Report	Report	2.98	8.95
2,3,7,8-Tetrachlorodibenzofuran	2 X Week	24-Hr. Comp.	-----	<ML	-----	-----

- [1] Sampling for Ammonia (as N) and Phenols (4AAP) shall occur at the monitoring frequencies specified in the permit on the same day at Outfalls 009, 010, 011, and 509.
- [2] The limitation and standard for 2,3,7,8 – tetrachlorodibenzofuran (2,3,7,8 – TCDF) is expressed as less than the Minimum Level ("<ML"). The term Minimum Level (ML) means the level at which the analytical system gives recognizable signals and an acceptable calibration point. For 2,3,7,8 – TCDF, the minimum level is 10 pg/l per EPA Method 1613B for water and wastewater samples. The term pg/L means picograms per liter (ppt = 1.0×10^{-12} gram/L).

Outfall 010

Parameter	Sample Frequency	Sample Type	Concentration (mg/l)		Mass (lb/d)	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Flow	1 X Week	24 Hr. Total	----	----	Report	Report
Total Suspended Solids	1 X Week	24-Hr. Comp.	Report	Report	Report	Report
Oil and Grease	1 X Week	Grab	Report	Report	Report	Report
Total Residual Chlorine	1 X Day[1]	Grab	0.012	0.028	3.7	8.6[2]
Ammonia, as N[3]	1 X Week	24-Hr. Comp.	Report	Report	100	300
Phenols (4AAP)[3]	1 X Week	Grab	Report	Report	Report	5
Zinc	1 X Week	24-Hr. Comp.	Report	Report	Report	Report
Lead	1 X Week	24-Hr. Comp.	Report	Report	Report	Report
Mercury[4] Interim Final	6 X Year 6 X Year	Grab Grab	---- 1.3 (ng/l)	---- 3.2 (ng/l)	---- 0.00040	---- 0.00098
Temperature Intake Outfall	2 X Week 2 X Week	Grab Grab	Report (°F) Report (°F)	Report (°F) Report (°F)	----- -----	----- -----
Thermal Discharge	2 X Week	Report	-----	-----	Report (MBtu/hr)	Report (MBtu/hr)
pH[5]	1 X Week	Grab	-----	-----	-----	-----

[1] Monitoring for TRC shall be 1 X Daily during Zebra or Quagga mussel intake chlorination, and continue for three additional days after Zebra or Quagga mussel treatment has been completed.

[2] Compliance with the daily maximum mass value will be demonstrated if the calculated mass value is less than 18.3 lbs/day.

[3] Ammonia (as N) and Phenols (4AAP) shall be reported on a net basis. Sampling for Ammonia (as N) and Phenols (4AAP) shall occur at the monitoring frequencies specified in the permit on the same day at Outfalls 009, 010, 011, and 509.

[4] Schedule of Compliance (54 Month)

[5] pH limitations are 6.0 standard units (daily minimum) and 9.0 standard units (daily maximum).

Outfall 011

Parameter	Sample Frequency	Sample Type	Concentration (mg/l)		Mass (lb/d)	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Flow	1 X Week	24 Hr. Total	----	----	Report	Report
Oil and Grease	1 X Week	Grab	Report	Report	Report	Report
Total Suspended Solids	1 X Week	24 Hr. Comp.	Report	Report	100	300
Ammonia, as N[3]	1 X Week	24 Hr. Comp.	Report	Report	75	150
Phenols (4AAP)[3]	1 X Week	Grab	Report	Report	Report	5
Total Residual Chlorine	1 X Day[1]	Grab	0.013	0.030	2.5	5.9[2]
Zinc	1 X Month	24 Hr. Comp.	Report	Report	Report	Report
Lead	1 X Week	24 Hr. Comp.	Report	Report	Report	Report
Mercury[4] Interim Final	6 X Year 6 X Year	Grab Grab	Report 1.3 (ng/l)	Report 3.2 (ng/l)	Report 0.00025	Report 0.00062
Temperature Intake Outfall	2 X Week 2 X Week	Grab Grab	Report (°F) Report (°F)	Report (°F) Report (°F)	----- -----	----- -----
Thermal Discharge	2 X Week	Report	-----	-----	Report (MBtu/hr)	Report (MBtu/hr)
Whole Effluent Toxicity Testing	1 X Quarter	Lab Analysis	-----	-----	-----	-----
pH[5]	1 X Week	Grab	-----	-----	-----	-----

[1] Monitoring for TRC shall be 1 X Daily during Zebra or Quagga mussel intake chlorination, and continue for three additional days after Zebra or Quagga mussel treatment has been completed.

[2] Compliance with the daily maximum mass value will be demonstrated if the calculated mass value is less than 11.7 lbs/day.

[3] Ammonia (as N) and Phenols (4AAP) shall be reported on a net basis. Sampling for Ammonia (as N) and Phenols (4AAP) shall occur at the monitoring frequencies specified in the permit on the same day at Outfalls 009, 010, 011, and 509.

[4] Schedule of Compliance (54 Month)

[5] pH limitations are 6.0 standard units (daily minimum) and 9.0 standard units (daily maximum).

Internal Outfall 701

Parameter	Sample Frequency	Sample Type	Concentration (mg/l)		Mass (lb/d)	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Flow	2 X Week	24 Hr. Total	----	----	Report	Report
Total Suspended Solids	2 X Week	24 Hr. Comp.	Report	Report	21.2	59.4
Lead	2 X Week	24 Hr. Comp.	Report	Report	0.255	0.764
Zinc	2 X Week	24 Hr. Comp.	Report	Report	0.382	1.15

Internal Outfall 702

Parameter	Sample Frequency	Sample Type	Concentration (mg/l)		Mass (lb/d)	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Flow	2 X Week	24 Hr. Total	----	----	Report	Report
Total Suspended Solids	2 X Week	24 Hr. Comp.	Report	Report	60.3	169
Oil and Grease	2 X Week	Grab	Report	Report	24.0	72.4
Lead	2 X Week	24 Hr. Comp.	Report	Report	0.724	2.17
Zinc	2 X Week	24 Hr. Comp.	Report	Report	1.08	3.26

Outfall 012

Parameter	Sample Frequency	Sample Type	Concentration (mg/l)		Mass (lb/d)	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Flow	1 X Week	24 Hr. Total	----	----	Report	Report
Oil and Grease	1 X Week	Grab	Report	Report	Report	Report
Total Suspended Solids	1 X Week	24 Hr. Comp.	Report	Report	Report	Report
Vanadium	1 X Week	24 Hr. Comp.	0.022	0.044	13	26
Ammonia, as N[3]	1 X Week	24 Hr. Comp.	Report	Report	75	150
Total Residual Chlorine	1 X Day[1]	Grab	0.010	0.020	5.8	12[2]
Zinc	1 X Week	24 Hr. Comp.	130 ug/l	260 ug/l	76	150
Lead	1 X Week	24 Hr. Comp.	Report	Report	Report	Report
Mercury	6 X Year	Grab	Report	Report	Report	Report
Whole Effluent Toxicity Testing	1 X Quarter	Lab Analysis	-----	-----	-----	-----
pH[3]	1 X Week	Grab	-----	-----	-----	-----

[1] Monitoring for TRC shall be 1 X Daily during Zebra or Quagga mussel intake chlorination, and continue for three additional days after Zebra or Quagga mussel treatment has been completed.

[2] Compliance with the daily maximum mass value will be demonstrated if the calculated mass value is less than 35.0 lbs/day.

[3] pH limitations are 6.0 standard units (daily minimum) and 9.0 standard units (daily maximum).

Internal Outfall 111

Parameter	Sample Frequency	Sample Type	Concentration (mg/l)		Mass (lb/d)	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Flow	2 X Week[1]	24 Hr. Total	----	----	Report	Report
Total Suspended Solids	2 X Week[1]	24 Hr. Comp.	Report	Report	Report	Report
Oil and Grease	2 X Week[1]	24 Hr. Comp.	Report	Report	Report	Report

[1] Samples taken for Internal Outfalls 111 and 211 must be collected on the same day.

Internal Outfall 211

Parameter	Sample Frequency	Sample Type	Concentration (mg/l)		Mass (lb/d)	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Flow	2 X Week[1]	24 Hr. Total	----	----	Report	Report
Total Suspended Solids	2 X Week[1]	24 Hr. Comp.	Report	Report	Report	Report
Oil and Grease	2 X Week[1]	Grab	Report	Report	Report	Report
Lead	2 X Week[1]	24 Hr. Comp.	Report	Report	3.25	9.3
Zinc	2 X Week[1]	24 Hr. Comp.	Report	Report	3.22	9.65
Naphthalene[2]	2 X Week[1]	Grab	-----	Report	-----	1.11
TCE[2]	2 X Week[1]	Grab	-----	Report	-----	1.68

[1] Samples taken for Internal Outfalls 111 and 211 must be collected on the same day.

[2] At the end of a twelve month sampling period, the permittee may request, in writing, a review of these monitoring requirements. Upon review by IDEM, the permit may be modified, after public notice and opportunity for hearing, to reduce or delete the monitoring requirements.

Internal Outfall 411

Parameter	Sample Frequency	Sample Type	Concentration (mg/l)		Mass (lb/d)	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Flow	2 X Week[1]	24 Hr. Total	----	----	Report	Report
Total Suspended Solids	2 X Week[1]	24 Hr. Comp.	Report	Report	4,381	11,365
Oil and Grease	2 X Week[1]	Grab	Report	Report	1,048	3,089

[1] Samples taken for Internal Outfalls 111 and 211 must be collected on the same day.

Schedule of compliance for the new effluent limitations for mercury:

The Reasonable Potential to exceed water quality based effluent limits analysis identified Mercury in the effluent from Outfalls 002, 009, 010, and 011. Based on the available data, the AM West facility may not be able to assure 100% compliance with the new WQBEL effluent limits for Mercury at the time the renewal NPDES permit is issued. Therefore, the proposed permit is eligible to contain a schedule of compliance for the new water quality-based effluent limitations for Mercury at those outfalls. The schedule of compliance requires ArcelorMittal to develop a plan to identify the sources of Mercury in the wastewater being treated and to develop a plan to achieve compliance with the final effluent limits and implement the plan within 24 months after the plan to collect data and information regarding pollution prevention and treatment has been approved.

The compliance schedule regarding the final effluent limits for Mercury requires the permittee to achieve compliance with the effluent limitations specified for Mercury at Outfalls 002, 009, 010, and 011 as soon as possible but no later than fifty-four (54) months from the effective date of this permit. See the Fact Sheet or Permit for more details about the Schedule of Compliance for these pollutants.

Thermal requirements:

The Indiana Harbor Canal and Indiana Harbor shall be capable of supporting a well-balanced, warm water aquatic community. The water quality criteria for temperature applicable to these waterbodies are included in 327 IAC 2-1.5-8(c). Temperature was not a pollutant of initial focus in the Water Quality Guidance for the Great Lakes system under 40 CFR Part 132. Therefore, Indiana was allowed to apply its own temperature criteria to waters within the Great Lakes system when the rules were last revised in 1997 as part of the Great Lakes rulemaking. During this rulemaking, the monthly maximum temperature criteria that were updated in 1990 were retained. Indiana regulations state that the temperature criteria apply outside a mixing zone, but the allowable mixing zone is not established in the rules. IDEM current practice is to allow fifty percent (50%) of the stream flow for mixing to meet temperature criteria.

The implementation procedures under 327 IAC 5-2-11.4 for developing wasteload allocations for point source discharges address temperature under 5-2-11.4(d)(3). This provision states that temperature shall be addressed using a model, approved by the commissioner, that ensures compliance with the water quality criteria for temperature. There is also no specific procedure in the rules for determining whether a discharger is required to have water quality-based effluent limits (WQBELs) for temperature. Therefore, the general provision for making reasonable potential determinations in 5-2-11.5(a) is applicable. This provision establishes that if the commissioner determines that a pollutant or pollutant parameter is or may be discharged into the Great Lakes system at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any applicable narrative or numeric water quality criterion under 2-1.5, the commissioner shall incorporate WQBELs in an NPDES permit that will ensure compliance with the criterion. In making this determination, the commissioner shall exercise best professional judgment, taking into account the source and nature of the discharge, existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, and, where appropriate, the dilution of the effluent in the receiving water. The commissioner shall use any valid, relevant, representative information pertaining to the discharge of the pollutant.

The multi-discharger model for the Indiana Harbor Canal/Lake George Canal/Indiana Harbor subwatershed discussed above included five active outfalls discharging to the Indiana Harbor

Canal and four active outfalls discharging to the Indiana Harbor that contain a thermal component such as non-contact cooling water or boiler blowdown as a source of wastewater. ArcelorMittal Indiana Harbor – Indiana Harbor West Outfall 002 has a flow of 11.2 MGD consisting mostly of non-contact cooling water; Outfall 009 has a flow of 55.3 MGD with Internal Outfall 509 having a flow of 1.1 MGD and the remaining consisting mostly of non-contact cooling water; Outfall 010 has a flow of 36.6 MGD consisting mostly of non-contact cooling water; Outfall 011 has a flow of 23.4 MGD with new Internal Outfalls 701 and 702 having combined flows of less than 1 MGD and the remaining consisting mostly of non-contact cooling water. The 1986 permit does not include a requirement for the monitoring of effluent temperature. The permit does include a requirement that sets the allowable net plant thermal discharge for Outfalls 001, 002, 009, 010, and 011 at 2.24×10^9 BTU/Hr. Based on the Post Public Notice Addendum included in the Fact Sheet of the 1986 permit, temperature monitoring was removed from the permit because the production at that time did not approach the limitation for thermal output. The main source of cooling water for ArcelorMittal West Outfall 002 is the No. 1 Intake on the Indiana Harbor. The main source of cooling water for ArcelorMittal West Outfalls 009, 010 and 011 is the No. 2 Intake on Lake Michigan. Since the facility is not required to report effluent temperature, limited data are available. Effluent temperature data were collected in July 1999 and April 2000 as part of the Grand Calumet River TMDL study. Effluent temperature data are also available from the 2009 permit renewal application update and are reported as winter values. The maximum reported temperatures were measured during the 1999 TMDL sampling and were 86 °F at Outfall 002, 97 °F at Outfall 009, 84 °F at Outfall 010 and 82 °F at Outfall 011.

The multi-discharger model accounted for the intrusion of lake water into the Indiana Harbor and Indiana Harbor Canal. The intrusion of lake water produces thermal stratification that ends at the railroad bridge about 0.7 miles upstream of the mouth of the Indiana Harbor Canal. The ArcelorMittal Indiana Harbor Long Carbon (IN0063355) Outfall 001 on the east side of the canal and ArcelorMittal Indiana Harbor – Central WWTP (IN0063711) Outfall 001 and ArcelorMittal West Outfall 002 on the west side of the canal are upstream of the railroad bridge. ArcelorMittal West Outfalls 009 and 010, which are two large sources of non-contact cooling water, are the first two discharges downstream of the railroad bridge. As part of a special condition in the ArcelorMittal Indiana Harbor East (IN0000094) 1996 permit, the facility was required to conduct sampling in the Indiana Harbor Canal downstream of ArcelorMittal Indiana Harbor Long Carbon Outfall 001 and between ArcelorMittal East Outfalls 008 and 011 and in the Indiana Harbor at a point equal distant from ArcelorMittal East Outfalls 011, 014, and 018. Sampling was to be conducted from April through November for two years and at three river depths (one foot below the surface, mid-depth, and one foot above the bottom). The facility conducted the sampling in 1997 and 1998 and submitted a summary of the results of this sampling along with an analysis of the thermal impact of the ArcelorMittal discharges to the Indiana Harbor Canal and Indiana Harbor based on the sampling results in a November 19, 2010, report. The report concluded the following: ArcelorMittal East (IN0000094) and ArcelorMittal West (IN0000205) were both operating at reasonably high production rates in 1997 and 1998 as measured by raw steel production; ambient air temperatures were within normal ranges; there have been no significant changes in the flow regimes in the Indiana Harbor Canal since the study was done; and, the study results demonstrate compliance with applicable temperature criteria.

Additional temperature monitoring at multiple depths was conducted in the Indiana Harbor Canal and Indiana Harbor as part of the July 1999 and April 2000 sampling conducted for the Grand Calumet River TMDL study. The sampling included two locations in the Indiana Harbor (just beyond the lighthouse at the outer edge of the Indiana Harbor and in the middle of the Indiana Harbor, just downstream of ArcelorMittal West Outfall 011, the last outfall on the Indiana Harbor), two locations in the Indiana Harbor Canal downstream of the railroad bridge (about 0.6 miles downstream of ArcelorMittal West Outfalls 009 and 010 at the mouth of the Indiana Harbor Canal and about 0.3 miles downstream of ArcelorMittal West Outfalls 009 and 010), one

location just downstream from Dickey Road and downstream of the three thermal discharges upstream of the railroad bridge and one location just upstream of ArcelorMittal Indiana Harbor – Central WWTP Outfall 001 which is the ArcelorMittal thermal discharge that is furthest upstream of the railroad bridge. The data showed temperature stratification downstream of the railroad bridge and a decreasing trend in temperature from upstream to downstream. The Indiana Harbor Canal and Indiana Harbor were in compliance with the water quality criteria for temperature. Effluent temperature and flow data were collected during the July 1999 sampling and effluent temperature data were collected during the April 2000 sampling. The TMDL studies were done after the shutdown of the No. 4 AC power station that discharged through ArcelorMittal East Outfall 018 until about May 1999. A review of historical instream temperature data at IDEM fixed stations on the Indiana Harbor Canal and Indiana Harbor from January 1990 through December 2010 and the fixed station on Lake Michigan from January 1997 through December 2010 shows that the maximum temperature values were recorded in July 1999. The average stream flow during the July 1999 temperature monitoring as recorded at USGS gaging station 04092750 in the Indiana Harbor Canal at Canal Street was 485 cfs which is close to the Q7,10 of 352 cfs. Therefore, the July 1999 temperature monitoring was done during a period that is very close to critical stream conditions.

In addition to the instream sampling, a multi-discharger model was used to assist in the reasonable potential analysis. The multi-discharger model for toxics discussed above was modified to account for temperature. The mixing zone was set at fifty percent (50%) of the stream flow to be consistent with current IDEM practice for mixing zones for temperature. The model does not account for heat dissipation so it represents a conservative, dilution only analysis. The effluent and instream data collected in July 1999 and April 2000 as part of the Grand Calumet River TMDL study were used as inputs to the model to determine if the model could predict the measured instream temperatures. The model predicts an increase in temperature downstream of the railroad bridge beginning with ArcelorMittal West Outfalls 009 and 010 and no exceedance at the edge of any mixing zones for both July 1999 and April 2000. The July 1999 TMDL data show a large decrease in temperature (about 7 °F) from Dickey Road to downstream of ArcelorMittal West Outfalls 009 and 010 in the upper one-half depth of the temperature stratified river with an even larger decrease in the lower one-half depth. There was essentially no further decrease in temperature in the Indiana Harbor during the sampling. The April 2000 TMDL data show a small decrease (about 0.5 °F) from Dickey Road to downstream of Outfalls 009 and 010. However, the temperature did decrease to a larger extent in the Indiana Harbor (about 4 °F). The multi-discharger model is therefore a conservative means of determining the impact of the thermal discharges.

A Q7,10 flow of 352 cfs, long-term average effluent flows, except as noted below, and background temperatures from fixed station IHC-3S were used in the multi-discharger thermal model as were used in the multi-discharger toxics model. The critical months of April through November were modeled to be consistent with the instream sampling requirement in the 1996 ArcelorMittal East permit and the months of June through September were included as one period since the same maximum criterion of 90 °F applies each month. The effluent temperature input to the model for ArcelorMittal Indiana Harbor Long Carbon and ArcelorMittal East was set equal to the maximum temperature reported for the month during the period January 1998 through December 2010 if it was considered representative data. The effluent temperature for ArcelorMittal Indiana Harbor – Central WWTP and ArcelorMittal West was set equal to the July 1999 TMDL data for the June through September period and the greater of the 2009 permit renewal application data or the April 2000 TMDL data for the other months since the permit renewal application data were reported as winter values. The effluent flow for ArcelorMittal West Outfall 009 for the June through September period was set equal to the daily maximum flow due to this outfall having the highest effluent temperature and a significant increase in discharge flow during this period. The results of the modeling show that the Indiana Harbor Canal and Indiana Harbor will be in compliance with the water quality criteria for

temperature during these critical months. Based on the results of the instream sampling and multi-discharger thermal model, the discharges from ArcelorMittal Indiana Harbor West Outfalls 002, 009, 010 and 011 do not have a reasonable potential to exceed a water quality criterion for temperature. Under 5-2-11.5(e), the commissioner may require monitoring for a pollutant of concern even if it is determined that a WQBEL is not required based on a reasonable potential determination. Monitoring for temperature and thermal discharge was added to Outfalls 002, 009, 010, and 011 in the renewal permit.

The thermal discharge shall be calculated for Outfalls 002, 009, 010, and 011. Such discharge shall be limited and monitored by the permittee as specified below.

- a. Flow and temperature values used in thermal discharge calculations shall be taken from the same day of monitoring.
- b. The thermal discharge shall be computed as follows:

$$\text{Thermal Discharge (MBtu/Hr.)} = Q \times (T_o - T_i) \times 0.3477$$

where,

MBtu/Hr = Million Btu/Hr.
 Q = 24 hour discharge flow, MGD
 To = effluent temperature, °F
 Ti = influent temperature, °F
 0.3477 = conversion factor

- c. Temperature shall be monitored as follows at Outfalls 002, 009, 010, and 011:

DISCHARGE LIMITATIONS

<u>Parameter</u>	<u>Quantity or Loading</u>		<u>Units</u>	<u>Quality or Concentration</u>		<u>Monitoring Units</u>	<u>Requirements</u>	
	<u>Monthly Average</u>	<u>Daily Maximum</u>		<u>Monthly Average</u>	<u>Daily Maximum</u>		<u>Measurement Frequency</u>	<u>Sample Type</u>
Temperature								
Intake [2]	----	----	----	Report	Report	°F	2 X Week	Grab
Outfall [1]	----	----	----	Report	Report	°F	2 X Week	Grab

[1] Temperature at Outfalls 002, 009, 010, and 011 shall be sampled between the hours of 12 pm and 4 pm.

[2] On days when temperature is sampled at an outfall, temperature shall also be sampled at the intake supplying the most significant source of water to the outfall.

Modifications from technology based effluent limitations for ammonia and phenol (301(g) Variance):

Section 301(g) of the Clean Water Act and 327 IAC 5-3-4(b)(2) allow for a variance from the applicable BAT requirements through the development of Proposed Modified Effluent Limitations (PMELs) for the non-conventional pollutants of ammonia, chlorine, color, iron, and total phenols (4AAP) provided the following conditions are met:

1. The proposed modified effluent limits (PMELs) will meet the categorical BPT effluent limits (Technology Based Effluent Limits) or applicable water quality based effluent limits (WQBEL), whichever are more stringent;
2. The PMELs will not result in any additional requirements on other point or nonpoint sources;
3. The PMELs will not interfere with the attainment or maintenance of water quality which will protect public water supplies, aquatic life, and recreational activities; and,
4. The PMELs will not result in the discharge of pollutants in quantities which may reasonably be anticipated to pose an unacceptable risk to human health or the environment because of bioaccumulation, persistency in the environment, acute toxicity, chronic toxicity (including carcinogenicity, mutagenicity, or teratogenicity, or synergistic properties).

During the previous permit cycle, this agency granted Section 301(g) variances for ammonia (as N) and phenols (4AAP) in the ironmaking and sintering process wastewaters. This request was identified as approved by U.S. EPA to this agency in a letter dated March 3, 1986. Therefore, the previous permit included net limits for ammonia (as N) and phenols (4AAP) at Outfalls 009, 010, and 011 since such wastewaters were discharged through each of those outfalls. The permittee was required to sample intake water at pumping stations 1 and 2 for ammonia and phenols at the same frequency as the discharge waters. Net values were calculated by subtracting the measured intake values from the measured effluent values.

In a letter dated August 24, 2007, the permittee identified the reconfiguration of wastestreams and, more specifically, the redirection of blast furnace/sinter plant wastestreams. The permittee stated that the Section 301(g) variance limits for ammonia and phenols should apply at the blast furnace/sinter plant internal outfall (proposed Internal Outfall 510 at the time) as **gross** limitations. This request was updated in a June 15, 2009, letter identifying PMELs for ammonia of 400 lbs/day monthly average and 1,000 lbs/day daily maximum and 10 lbs/day daily maximum for phenols at the internal outfall.

Furthermore, in a letter dated December 20, 2010, the internal outfall was changed from Internal Outfall 510 to 509. Internal Outfall 509 is now the NPDES permit compliance monitoring station for process water discharges from the blast furnace and sinter plant. Outfall 509 discharges to Outfall 009 to the Indiana Harbor Ship Canal. After the new treatment plant for the blast furnaces and sinter plant was constructed and placed into operation, the ammonia limits initially requested in 2009 were not sufficient so an updated request was submitted dated May 10, 2011, requesting the entire 301(g) limits as gross limits at internal outfall 509. IDEM has reviewed the submittal from ArcelorMittal and as a result of that review reduced the request to what will be necessary to meet the Projected Water Quality Based Effluent Limits at final Outfall 009. The variance granted is now updated to be 550 lbs/day monthly average and 1200 lbs/day daily max for ammonia. The phenols will remain at 21 lbs/day daily maximum.

The categorical effluent limitation guidelines for ammonia (as N) and phenols (4AAP) which form the basis for the BPT and BAT effluent limits for discharges from Internal Outfall 509 are found at 40 CFR 420.32(a) and 420.33(a), respectively. The generally applicable BAT and BPT limits have been calculated and are presented in Table 1-301(g).

Table 1-301(g)

BPT, PMELs, BAT

Limits (Outfall)	Ammonia-N (lbs/day)		Phenols (4AAP) (lbs/day)	
	Monthly Avg	Daily Max	Monthly Avg	Daily Max
BPT	1128	3381	44	131
Current Variance Limits (net) Outfalls 009, 010, 011	600	1450	NA	21
PMELs (net) Outfalls 009, 010, 011	600	1450	NA	21
BAT	99	298	0.99	1.99

IDEM has reviewed ArcelorMittal Indiana Harbor West's request for the PMELs for ammonia (as N) and phenols (4AAP) based on the 301(g) variance continuance request dated June 15, 2009, and revised on May 10, 2011, in the context of Indiana's currently applicable water quality standards and IDEM's procedures for conducting wasteload allocations.

Cooling water intake structure (CWIS):

Section 316(b) of the federal Clean Water Act requires that facilities minimize adverse environmental impact resulting from the operation of cooling water intake structures (CWIS) by using the best technology available (BTA). U.S. EPA has promulgated rules to implement these requirements for new facilities (Phase I rules), large, existing power plants (Phase II rules) which are currently remanded, and offshore oil and gas extraction facilities (Phase III rules), and that implementation must take place through the issuance of NPDES permits. However, there is a large universe of facilities which are not specifically addressed by the rules, including:

- New facilities with a CWIS design flow less than 2 MGD;
- Existing power plants with a CWIS design flow less than 50 MGD; and
- Manufacturing facilities such as existing steel mills, paper mills, etc. with a surface water intake that use at least a portion of their intake flow for cooling purposes.

U.S. EPA has recently emphasized that all of these facilities, including those not specifically addressed by rules must be evaluated for 316(b) compliance. 40 C.F.R. §125.90(b) directs permitting authorities to establish 316(b) requirements on a best professional judgment (BPJ) basis for existing facilities not subject to categorical section 316(b) regulations (Phase I, II (currently remanded) or III rules). IDEM is required to make a BTA determination using BPJ so the permit will comply with the federal regulation.

ArcelorMittal submitted documentation on the design and operation of the CWISs at the Indiana Harbor West facility in November 2008 and updated in February 2011. ArcelorMittal West has five (5) active pumping stations. The intake structures for Indiana Harbor West are identified as the No. 1 Pump House, the No.2 Pump House, Low Head Pump House, Power House Pump House, and the No. 3 Pump House.

The following is a summary of information regarding the CWISs submitted by the permittee for this facility.

No. 1 Pump House

- Indiana Harbor and Ship Canal is the source water.
- The No. 1 Pump House is located in the interior of the Plant at the terminus of a narrow intake canal approximately 1,000 ft long and 7 ft wide. The pump house was constructed in 1939 to provide cooling water and process make-up water to the No. 3 and 4 Blast Furnaces. The pump house was initially designed to contain six service pumps of various capacities. Since then the pumps have been replaced and two removed entirely.
- Currently, only two pumps are operational.
- 49 MGD effective design intake capacity.
- Four vertical traveling screens (single entry/exit) in a common wet well. Two screens have been retrofitted to function in a fixed panel mode utilizing No. 0.51 diamond-shaped, flattened-expanded aluminum mesh. Of the remaining two vertical traveling screens, one has been removed and screen opening blocked. The other is fitted with 0.50" stainless steel square-mesh screening.
- 0.42 ft/s velocity under normal operating conditions as calculated by the permittee.
- 0.86 ft/s total rated capacity velocity as calculated by the permittee.
- Fixed screens are manually removed and washed as needed. The traveling screen includes a wash system used to remove impinged debris and/or fish, which are washed into one of two collection baskets. Collection basket contents are returned manually discarded.

No. 2 Pump House

- Lake Michigan is the source water.
- The No. 2 Pump House is located at the terminus of an intake canal approximately 1.2 miles long and 70 feet wide, opening to 300 feet at the entrance to the pump house forebay. The No. 2 Pump House was originally designed with three circulating pumps and two service pumps.
- Currently, only two circulating pumps and one service pump is in operation.
- 87 MGD flow based on current and fixed pump configuration and operation.
- Centralized Screen House that serves the No. 2 Pump House, Low Head Pump House, and Power House Pump House. The only potential for entrainment and/or impingement as a result of operation of the No. 2 Pump House is at the Centralized Screen House.
- Three vertical traveling screens (single entry/exit) in a common wet well with 0.35" stainless steel square-mesh screening and two fixed panel screens utilizing No. 0.51 diamond-shaped, flattened-expanded aluminum mesh.
- 1.66 ft/s velocity under normal operating conditions as calculated by the permittee.
- 2.66 ft/s total rated capacity velocity as calculated by the permittee.
- Fixed screens are manually removed and washed as needed. Traveling screens include a wash system used to remove impinged debris and/or fish, which are washed into a common collection basket. The collection basket contents are returned manually discarded.

Low Head Pump House

- After passing through screens in the Common Screen House, water is directed via vertical shaft to a deep tunnel approximately 3,137 feet to the Low Head Pump Station. The only potential for entrainment and/or impingement as a result of operation of the Low Head Pump House is at the Centralized Screen House.
- Currently, there are two operable pumps.
- Approximately 101 MGD flow based on current pump configuration and operation.

Power House Pump House

- After passing through screens in the Common Screen House, non-contact cooling water for the Power House is drawn directly from the deep tunnel. The only potential for entrainment and/or impingement as a result of operation of the Power House Pump House is at the Centralized Screen House.
- Currently, there are ten operable pumps.
- Approximately 117 MGD flow based on current pump configuration and operation.

No. 3 Pump House

- Lake Michigan is the source water.
- The No. 3 Pump House is located in the northeast portion of the facility and withdrawals water from the same intake canal as the No. 2 Pump House. The No. 3 Pump House was originally designed for eight pumps but only four were installed and provides cooling water to the No. 3 Cold Strip Mill and the 84-inch Hot Strip Mill via four pumps.
- Currently, there are operable pumps but only two are used during normal operations.
- 144 MGD flow based on current pump configuration during normal operations.
- Six vertical traveling screens (single entry/exit) in a common wet well with most utilizing a 1/8" stainless steel woven-mesh screening and the rest with standard 3/8" mesh. Four of the six screens are currently operated.
- 0.30 ft/s velocity under normal operating conditions as calculated by the permittee.
- 1.33 ft/s total rated capacity velocity as calculated by the permittee.
- The traveling screens are designed with individual wash systems used to remove impinged debris and/or fish, which are washed into a common collection trough.

IDEM has determined that the existing CWISs utilize the best technology available based on BPJ because there has been a substantial reduction in water intake demand, fewer pumps are currently used, and there is an effective increase in screen surface area due to the use of fewer pumps.

ArcelorMittal West is being required to conduct studies during this permit cycle to further characterize the nature and extent of the environmental impacts, if any, from the CWISs in a scientifically valid manner. Impingement and entrainment have been determined to be appropriate measures for determining whether adverse environmental impacts have been minimized. The permit contains monitoring conditions and reporting requirements to ensure operation of all intakes in a manner that will minimize adverse environmental impact as outlined in Part IV of the permit.

The centralized screen house is the point at which water drawn by the No. 2, Low Head, and Power House Pump Houses passes through screens and is the potential point of impingement for the three pump houses. It is also the location of highest through-screen velocity at the facility. Therefore, the studies required in Part IV of the permit will be performed at the centralized screen house. This approach will analyze a 'worst-case' scenario in relationship to intake velocity and fish entrainment/impingement. It should be noted that any changes required as a result of a study's finding must be applied to all CWISs at the facility. This determination will be reassessed at the next permit reissuance to ensure that the CWIS continues to meet the requirements of Section 316(b) of the federal Clean Water Act (33 U.S.C. section 1326).

In addition, the permit proposes that the AM West's CWISs must be designed and located to minimize entrainment and damage to desirable organisms. In general, the intake structure shall have minimum water velocity and shall not be located in spawning or nursery areas of important fishes. Water velocity at screens and other exclusion devices shall also be at a minimum.

The specific requirements pertaining to the intake structures are contained in Part IV of the proposed NPDES Permit. Part IV of the permit contains requirements to ensure operation of all intakes in a manner that will minimize adverse environmental impact as follows:

1. AM West is required to conduct a two year study within one year of the effective date of the permit to further characterize the nature and extent of the environmental impacts from the CWISs in a scientifically valid manner. This determination will be reassessed at the next permit reissuance to ensure that the CWIS continues to meet the requirements of Section 316(b) of the federal Clean Water Act (33 U.S.C. section 1326). A confirmation study is required to be conducted five years after the initial two year study has been completed.
2. ArcelorMittal shall provide advance notice to IDEM of any proposed changes to the CWISs or proposed changes to operations at the facility that affect the information taken into account in the current BTA evaluation.
3. The discharge of Intake Screen Backwash shall meet the Narrative Water Quality Standards contained in Part I.B. of the permit.
4. Fish returns shall be evaluated for all intakes to determine if they minimize fish mortality. The facility shall submit to IDEM an evaluation of options to minimize fish mortality within one year from the effective date of the permit. This evaluation will include time frames to implement these measures. The permittee will implement any options that IDEM identifies as BTA after the information becomes available.

Storm water:

According to 40 CFR 122.26(b)(14)(ii) and 327 IAC 5-4-6(b)(1), facilities classified under Industrial Classification (SIC) Code 3312 – Steel Mill, are considered to be engaging in “industrial activity”. Site storm water is discharged at each outfall. Therefore the permittee is required to have all storm water discharges associated with industrial activity permitted. Treatment for storm water discharges associated with industrial activities is required to meet, at a minimum, best available technology economically achievable/best conventional pollutant control technology (BAT/BCT) requirements.

U.S. EPA has determined that non-numeric Technology-Based Effluent Limits have been determined to be equal to BPT/BAT/BCT for storm water associated with industrial activity. The Non-Numeric Storm water Conditions and Effluent Limits contain the technology-based effluent limitations. Effective implementation of these requirements should meet the applicable water quality based effluent limitations. The non-numeric requirements of the permit contain effluent limitations, defined in the CWA as restrictions on quantities, rates, and concentrations of constituents which are discharged. Violation of any of these effluent limitations constitutes a violation of the permit.

The technology-based effluent limitations require the permittee to minimize exposure of raw, final, or waste materials to rain, snow, snowmelt, and run-off. In doing so, the permittee is required, to the extent technologically available and economically practicable and achievable, to either locate industrial materials and activities inside or to protect them with storm resistant coverings. In addition, the permittee is required to: (1) use good housekeeping practices to keep exposed areas clean, (2) regularly inspect, test, maintain, and repair all industrial equipment and systems to avoid situations that may result in leaks, spills, and other releases of pollutants in storm water discharges, (3) minimize the potential for leaks, spills and other releases that may be exposed to storm water and develop plans for effective response to such spills if or when they occur, (4) stabilize exposed area and contain run-off using structural and/or

non-structural control measures to minimize onsite erosion and sedimentation, and the resulting discharge of pollutants, (5) divert, infiltrate, reuse, contain, or otherwise reduce storm water runoff, to minimize pollutants in your discharges, (6) enclose or cover storage piles of salt or piles containing salt used for deicing or other commercial or industrial purposes, including maintenance of paved surfaces, (7) train all employees who work in areas where industrial materials or activities are exposed to storm water, or who are responsible for implementing activities necessary to meet the conditions of this permit (e.g., inspectors, maintenance personnel), including all members of your Pollution Prevention Team, (8) ensure that waste, garbage and floatable debris are not discharged to receiving waters by keeping exposed areas free of such materials or by intercepting them before they are discharged, and (9) minimize generation of dust and off-site tracking of raw, final, or waste materials.

To meet the non-numeric effluent limitations in Part I.D.4, the permit requires ArcelorMittal West to select control measures (including best management practices) to address the selection and design considerations in Part I.D.3.

The permittee must control its discharge as necessary to meet applicable water quality standards. It is expected that compliance with the non-numeric effluent limitations and other terms and conditions in this permit will meet this effluent limitation. However, if at any time the permittee, or IDEM, determines that the discharge causes or contributes to an exceedance of applicable water quality standards, the permittee must take corrective actions, and conduct follow-up monitoring.

Distinct from the effluent limitation provisions in the permit, the permit requires the discharger to prepare a Storm water Pollution Prevention Plan (SWP3) for its facility. The SWP3 is intended to document the selection, design, installation, and implementation (including inspection, maintenance, monitoring, and corrective action) of control measures being used to comply with the effluent limits set forth in Part I.D. of the permit. In general, the SWP3 must be kept up-to-date, and modified whenever necessary to reflect any changes in control measures that were found to be necessary to meet the effluent limitations in this permit.

The requirement to prepare a SWP3 is not an effluent limitation, rather it documents what practices the discharger is implementing to meet the effluent limitations in Part I.D. of the permit. The SWP3 is not an effluent limitation because it does not restrict quantities, rates, and concentrations of constituents which are discharged. Instead, the requirement to develop a SWP3 is a permit "term or condition" authorized under sections 402(a)(2) and 308 of the Act. Section 402(a)(2) states, "[t]he Administrator shall prescribe conditions for [NPDES] permits to assure compliance with the requirements of paragraph (1) of this subsection, including conditions on data and information collection, reporting, and such other requirements as he deems appropriate." The SWP3 requirements set forth in this permit are terms or conditions under the CWA because the discharger is documenting information on how it intends to comply with the effluent limitations (and inspection and evaluation requirements) contained elsewhere in the permit. Thus, the requirement to develop a SWP3 and keep it updated is no different than other information collection conditions, as authorized by section 402(a)(2), in other permits.

Part I.E.2.d(2) of the permit requires that the permittee retain a copy of the current SWP3 at the facility and it must be immediately available, at the time of an onsite inspection or upon request, to IDEM. Additionally, interested persons can request a copy of the SWP3 through IDEM. By requiring members of the public to request a copy of the SWP3 through IDEM, the Agency is able to provide the permittees with assurance that any Confidential Business Information contained within its SWP3 is not released to the public.

6) For more information

The public should direct questions to Richard Hamblin, IDEM contact person with IDEM's Office of Water Quality, at (800) 451-6027 ext. 2-8696, (317) 232-8696, or via e-mail at rhamblin@idem.IN.gov.

The media should direct inquiries to Amber Finkelstein, IDEM public information officer, at (800) 451-6027, ext. 2-8512, (317) 232-8512, or via e-mail to afinkels@idem.IN.gov.

Please visit the IDEM website at <http://www.in.gov/idem/5338.htm>.